

EXHIBIT 3

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[1] and be pumped out by the wells.

[2] **THE COURT:** How do scientists determine the boundary
[3] of the capture zone?

[4] **THE WITNESS:** Well, I showed you some capture zones
[5] yesterday for Station 6 and those were determined using a
[6] computer flow model of the aquifer. In a relatively
[7] complicated system -- by "complicated" I mean there's a lot of
[8] different wells pumping at different rates, that's the common
[9] way to make that determination.

[10] **Q.** Did you need your model to reach the conclusion about the
[11] number of sources that could impact Station 6 in the future?

[12] **A.** Well, I think when I look at the map that shows where these
[13] spill locations are, the density of those spill locations, I'm
[14] looking at the presence of numerous gasoline stations, and the
[15] density of those stations, they're really in 360 degrees all
[16] the way around the Station 6 well field. That really -- no
[17] matter the pumping scheme, there are sources in all different
[18] directions. So I don't think that you need to run a transport
[19] model, which is really what we did in the next part of our
[20] study, but I don't think you really need to run a transport
[21] model to see that MTBE will affect Station 6 in the future.

[22] **Q.** Well, why then did you use a transport model as part of
[23] your work in this case?

[24] **A.** Well, the reason that we used a transport model was that
[25] you could see that there are sources of MTBE contamination.

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[1] But what we wanted to also do was to try to put some numbers on
[2] it, to try to say how high of a concentration of MTBE will
[3] occur at Station 6 in the future, and how long will it last.
[4] So in order to do those kinds of numerical projections, that's
[5] what we need to use the transport model for.

[6] **Q.** And is that a common or an uncommon effort undertaken by
[7] public water suppliers with respect to analyzing the potential
[8] impacts of contaminants on their wells?

[9] **A.** It's very common to look at the capture zone of a well and
[10] to identify whether or not there are sources of contamination
[11] in those wells. Many times there are simpler analyses that are
[12] done where once you identify those sources you can do some
[13] kinds of calculations about how those sources might impact the
[14] wells which is in the capture zone.

[15] It's probably a little less common to use a full
[16] numerical model to do that, but in a case like this where there
[17] are so many sources in different directions, and also there's a
[18] pumping plan that changes over time, where we have Station 24
[19] coming on, we have Station 6 coming on and we have
[20] dependability coming on, so when things are changing over time,
[21] then a numerical model can be more appropriate to use.

[22] **Q.** So after reviewing the information that you described so
[23] far, what was the next step in your analysis for this case?

[24] **A.** Well, we then needed to take the information that we had
[25] and use it as input into our groundwater model. I showed on

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[1] the slide yesterday that our inputs are things like locations
[2] of pumping wells and the rates that the wells pump at, but the
[3] other piece of information is where are the discharge locations
[4] and what are the levels of MTBE at those locations. So we
[5] needed to take the information that we had available and
[6] convert that so we could use it as input into the model.

[7] **Q.** With respect to your use of the model in this case, did you
[8] have perfect information about the sources of contamination?

[9] **A.** No, we did not have perfect information. We took a look
[10] through files that we obtained to see what information that we
[11] had, and what we generally knew was we knew that MTBE
[12] discharges had occurred. We knew that there were spills of
[13] gasoline, we knew that the gasoline contained MTBE and we also
[14] knew at many sites that there was MTBE in the groundwater
[15] there. But one of the things that we didn't know was how much
[16] groundwater had spilled at those locations.

[17] **Q.** Do you mean how much gasoline?

[18] **A.** I'm sorry, how much gasoline had spilled at those
[19] locations.

[20] **Q.** How did you deal with these uncertainties in addressing the
[21] questions posed to you in this case?

[22] **A.** What we do when we have a model that has uncertainties is
[23] we consider a range of possible input values and we see what
[24] the effect is at the output. So rather than just use one set
[25] of numbers as the input, we consider a range of possible inputs

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[1] and we see how does that affect the output and then we can
[2] understand the range of potential impacts at Station 6.

[3] **Q.** How many modeling exercises did you conduct?

[4] **A.** We did two different analyses. Analysis -- I called my
[5] first analysis analysis 1, and that analysis was primarily
[6] intended to look at how high will the MTBE get, what will the
[7] maximum concentration be at Station 6 when it pumps in the
[8] future.

[9] Then I did a second analysis I called Analysis 2, and
[10] that used a sort of different approach, a more average approach
[11] and that was looking to see how long will it last. My first
[12] analysis also gives me information about that, but I kind of
[13] wanted to test, because I had uncertain information, I wanted
[14] to test and see whether Station 6, how long the MTBE
[15] concentrations will be present there in the future.

[16] **Q.** Is it common for modelers to use such clever names for
[17] their analysis?

[18] **A.** It's a standard practice to use a range of input values,
[19] especially when there's uncertainty. The way that we deal with
[20] uncertainty is to consider a range of values. That's standard
[21] practice.

[22] **Q.** My serious question, is it common to perform more than one
[23] model simulation to try to answer the questions of both peak
[24] concentration and duration?

[25] **A.** That's right. We typically, as I said, characterize

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[1] uncertainty using a range of values.
[2] **Q.** And why is that?
[3] **A.** When there's uncertainty, we really want to get a more
[4] robust answer. We want to know about the future. We don't
[5] want to rely on one set of assumptions. We want to test it
[6] using different sets of assumptions and see if our conclusion
[7] still is supported.
[8] **Q.** So what was analysis 1?
[9] **A.** For analysis 1, what I wanted to do was look at the future
[10] peak concentrations at Station 6. The reasons that I wanted to
[11] look at peak concentrations is that when a treatment system is
[12] designed for Station 6 it needs to be big enough to remove the
[13] MTBE from the water. It needs to have enough capacity to
[14] remove the maximum. It would be sort of like if we were
[15] designing an air conditioning system in the building here. If
[16] we looked at, for example, you know, the average temperature in
[17] New York, it's around 55 degrees or so, we wouldn't want to
[18] build an air conditioning system assuming it's always
[19] 55 degrees. We know at some times of the year the temperatures
[20] are higher like today, and at other times of the year it's
[21] lower. So we know it fluctuates.
[22] And the same thing is true with groundwater
[23] contaminants. They tend to fluctuate over time. If you look
[24] at a set of water quality results from a well, there will be
[25] times when it's high, times when's low. It kind of fluctuates.

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[1] So there is an average concentration. There are also peaks and
[2] valleys to that. It's important when designing a treatment
[3] plant to be able to treat the water when it's at its peak, so
[4] for that reason we wanted to look at the maximum concentrations
[5] of MTBE in the future.
[6] **MR. STACK:** Move to strike for not responsive. The
[7] question was what did you do for analysis 1.
[8] **Q.** I can reframe the question to why is it important to
[9] analyze peak values, if you like.
[10] **THE COURT:** Were you trying to find peak values for
[11] analysis 1? Is that what --
[12] **THE WITNESS:** Yes. I was going to explain how in
[13] analysis 1 what we wanted to do is identify the peak
[14] concentrations of MTBE that occurred at various source
[15] locations, but the reason that I was using peak values is for
[16] what I just described that we needed to know the future peak
[17] concentrations at Station 6.
[18] **THE COURT:** I'll allow it.
[19] **Q.** So how did you conduct analysis 1 to understand peak values
[20] in anticipation in Station 6?
[21] **A.** So for analysis 1, we looked through the information that
[22] we had about discharges, gasoline discharges in the area of
[23] Station 6, and we had really two main sources of information
[24] for that. One was this toxic targeting database that I
[25] described to you before. So that database contains reports of

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[1] gasoline discharges that were made to the New York State DEC.
[2] So in that database there will be information about when a
[3] spill was reported, what kind of substance was discharged.
[4] Sometimes there's information on how much gasoline is
[5] discharged, and then in addition to that, there's summary
[6] information about the sites, and sometimes that summary
[7] information contains MTBE concentration information.
[8] **MR. STACK:** Objection, your Honor. This has been the
[9] subject of a motion in limine limiting this particular database
[10] only to geolocation of sources. I did not object because we
[11] haven't gotten into the substance of any of the reports, but I
[12] object to further questions. First of all, it's hearsay, and I
[13] believe the Court has determined it's not necessarily reliable.
[14] **MR. SHER:** Your Honor, if I may, the ruling that you
[15] issued on this point was that, A, geolocator information comes
[16] in per se. Second, that only to the extent that the underlying
[17] information in the DEC database differs from what's in the
[18] Toxic Targeting database is that information excluded and I
[19] believe all the information the witness has even mentioned so
[20] far, there's no discrepancy.
[21] **MR. STACK:** He has not mentioned specific data, your
[22] Honor. That's why I stood up, just for purposes of stating my
[23] objection. In getting the substance, we have to corroborate
[24] the data.
[25] **THE COURT:** Okay. I understand your point.

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[1] **Q.** So what type of data did you look for in reviewing the
[2] files you've described to use as inputs into your model?
[3] **A.** What I was primarily looking for, I need to start the model
[4] at a certain point in time and run it forward, so I selected
[5] the year 2004 to start the model.
[6] **Q.** Why did you use 2004?
[7] **A.** The reason I used 2004 is that in 2004 New York enacted a
[8] ban on MTBE in gasoline. So we would expect that if there were
[9] new gasoline discharges that occurred after 2004, that there
[10] wouldn't be much MTBE in those discharges.
[11] **Q.** And with respect to the input that you used from the Toxic
[12] Targeting database for that purpose, was that the same
[13] information reflected in the underlying DEC files with respect
[14] to maximum MTBE at these sites?
[15] **A.** To the extent I was able to review DEC files on these
[16] sites, it was the same information. I also reviewed another
[17] source of information, what we call site remediation files.
[18] Those are reports that when there's a discharge of a gasoline
[19] the discharger of the gasoline has to do an investigation of
[20] the property and sometimes clean up the property, so they make
[21] reports of their progress to the regional DEC.
[22] **THE COURT:** But the site remediation is up to the site
[23] owner or goes over to DEC?
[24] **THE WITNESS:** It goes over to DEC.
[25] **THE COURT:** The file does.

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[1] (In open court; jury present)
[2] **THE COURT:** Please be seated. Mr. Sher?
[3] **MR. SHER:** Thank you, your Honor.
[4] **BY MR. SHER:**
[5] **Q.** Mr. Terry, after you gathered all this data about maximum
[6] MTBE concentrations in 2004, what did you do next?
[7] **A.** Well, I then needed to use that information to develop
[8] input, which would be the starting point of the MTBE
[9] concentrations in the model. So to do that I need a map of the
[10] area of the model of the ground surface that shows the area
[11] where MTBE contamination is present.
[12] **Q.** And did you delineate plumes?
[13] **A.** What I did was, I delineated, I used the information to
[14] construct a contour map of maximum MTBE concentrations in 2004
[15] and I used that as the starting point of the model.
[16] **Q.** How do you do that?
[17] **A.** To create a contour map you have a set of points that are
[18] on a map and they have different values to them. It's like
[19] contour maps you may have seen before that show elevations.
[20] Different elevations are circled, so common elevations are
[21] surrounded by a common circle. You do the same thing with
[22] constructing a contour map of concentrations.
[23] However, what you need to do with the concentration
[24] data is you need to keep in mind the way that groundwater flows
[25] and the kinds of plumes that typically are associated with

[1] hand-contoured plume map generated by a hydrogeologist?
[2] **A.** That's right. There's various contouring routines that you
[3] can use, but generally speaking, they don't understand how
[4] groundwater flows and how plumes move. So the understanding of
[5] the geologist is important. And that's typically how this work
[6] is done.
[7] **Q.** So is it common for professionals in your field who are
[8] trying to do the kind of work you are doing in this case to
[9] hand-contour plumes for purposes of inputs for transport
[10] modeling?
[11] **A.** Yes, it is.
[12] **Q.** And is it the commonly accepted method for doing that?
[13] **A.** Hand contouring of the data in this way is the way that
[14] it's done.
[15] **Q.** And did you create a contour map for your inputs for
[16] analysis 1?
[17] **A.** Yes, I did.
[18] **MR. SHER:** Your Honor, I want to discuss and proffer
[19] for evidence Plaintiff's Exhibit 1677, which is behind tab 18.
[20] **Q.** Mr. Terry, using the techniques that you've just been
[21] describing, this the contour map that you prepared with the
[22] input for the work that you did for the transport model in this
[23] case?
[24] **MR. STACK:** Your Honor, I have no objection to it
[25] being a demonstrative, if we can tie it up and move it into

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[1] sources of contamination.
[2] **Q.** How do you consider, how do you know how to do that?
[3] **A.** From our experience in understanding how plumes form, from
[4] the studies that we reviewed about MTBE contamination,
[5] including that paper I showed you earlier, we know that MTBE
[6] plumes start at a source location and then they migrate with
[7] the flow of groundwater and that they form plumes that are
[8] thousands of feet long.
[9] **Q.** Do hydrogeologists do plume contours as a standard matter
[10] in performing the kind of analysis that you're doing in this
[11] case?
[12] **A.** Yes.
[13] **Q.** Why don't you use a computer to generate a plume?
[14] **A.** Sometimes we do use computers to generate contour maps.
[15] One thing with the computer contouring program is it really
[16] doesn't understand things like the way that groundwater flows
[17] and the way that plumes behave. It tends to kind of
[18] mathematically average things together. What we typically
[19] find, especially with contamination sources, is the contouring
[20] source create very broad concentrations, much broader than
[21] typically seen in the environment. So we're using our
[22] knowledge about the way plumes typically do form to help inform
[23] the way that we construct a plume on our map.
[24] **Q.** Is it your view that a computer-generated plume contour map
[25] generally shows a larger area of contamination than a

[1] evidence after the testimony?
[2] **THE COURT:** All right.
[3] **MR. SHER:** Liz, bring up PL 1677, please?
[4] **Q.** Could you explain to the jury what this is, Mr. Terry?
[5] **A.** Yes. This is a depiction of the contour map that we
[6] generated to use for our analysis 1 simulation in this case.
[7] **Q.** I see different colors and different shapes. Can you
[8] explain what those are?
[9] **A.** The blue triangles, the little dots that are shown on this
[10] map are where we have sources of information about MTBE
[11] concentrations in groundwater on the map.
[12] **MR. SHER:** Liz, if you could enlarge one of those off
[13] to the right side? Yes, there you go. Okay.
[14] **Q.** So we have a blue diamond labeled Q405. What is that?
[15] **A.** That is a USGS monitor well that's installed in the upper
[16] glacial aquifer, and there was a sample collected from that
[17] location in 2004 for MTBE analysis.
[18] **Q.** And next to it there's a blue diamond labeled 38. What
[19] does that represent?
[20] **A.** That's a City supply well 38.
[21] **Q.** And what does the -- and I hesitate to trust my view of the
[22] colors, but the sort of purplelish area shown around these
[23] wells, I'm sorry, around these data points?
[24] **A.** These are just areas of common concentration. So we're
[25] drawing contours around points that have similar concentrations

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[1] **MR. SHER:** That's correct.
[2] **THE COURT:** Your adversary says that's correct.
[3] **MR. SHER:** That's correct. It's there to orient the
[4] jury for where that ultimate plume is. But what the model
[5] output shows is the movement of the plumes through time. That
[6] will be what changes, and that's the output of the model.
[7] **MR. STACK:** Your Honor, I would object again on the
[8] grounds that the zone of capture changes over time. This is
[9] misleading, and it has a tendency to perhaps confuse the jury
[10] as to what is in existence in 2004.
[11] **THE COURT:** Well, it could be confusing, but the
[12] objection has been helpful in clarifying that the capture zone
[13] delineated in these exhibits is not the capture zone of 2004.
[14] So, as long as the witness explains that, then the rest of the
[15] pictures which talk about the plume movement is admissible.
[16] **MR. STACK:** Thank you, your Honor.
[17] **THE COURT:** So maybe you can start out by explaining
[18] the capture zone.
[19] **MR. SHER:** Thank you. Let's go and bring up.
[20] **THE COURT:** Is that blue area the alleged capture
[21] zone?
[22] **THE WITNESS:** The outlined area shows that, yeah, the
[23] final capture zone that we showed yesterday.
[24] **THE COURT:** When you say that won't happen until 2016
[25] --

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[1] **THE WITNESS:** It won't happen until after the
[2] dependability wells are pumping for some time. I think from my
[3] simulations yesterday that around 2024 or so this is the
[4] capture zone, and then ultimately this becomes the steady state
[5] capture zone for this well.
[6] **THE COURT:** And you drew that based on what you think
[7] the capture zone will be after the dependability wells are on.
[8] **THE WITNESS:** That's correct.
[9] **THE COURT:** OK. What was the purpose of drawing it
[10] then if it wasn't the case in 2004?
[11] **THE WITNESS:** Primarily for reference. I mean we
[12] could do it either way. But without that on there, I would
[13] probably want to put some other reference just to show you
[14] where we are.
[15] **THE COURT:** As long as that's explained, we can go
[16] ahead.
[17] **MR. SHER:** Your Honor, we went through yesterday, and
[18] it's behind tab 3.
[19] **THE COURT:** I know you just wanted to refresh the jury
[20] on the point.
[21] **MR. SHER:** Thank you. I appreciate it.
[22] **Q.** So, could you explain what this map shows with that
[23] clarification that the capture zone represented on there is not
[24] the capture zone as of 2004?
[25] **A.** This is showing the presence of the MTBE plumes as depicted

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[1] by the model. This is six months after the model has been
[2] running, so we are halfway into 2004. And I don't have a scale
[3] on here, but generally the red areas are the higher
[4] concentrations, and the yellow areas are the lower ones. This
[5] is really just meant to depict the general flow of the MTBE
[6] over time.
[7] **Q.** OK. Let's move forward to 2005. Describe what this shows,
[8] please.
[9] **A.** Same thing. You can see that the plumes are enlarging and
[10] dispersing to some extent. They are migrating generally to the
[11] southwest.
[12] **Q.** And if we could click through and stop at 2009. OK. The
[13] fact that the Station 6 wells are clear circles, what does that
[14] significant?
[15] **A.** That they are off, they have not been pumping during this
[16] period of time.
[17] **Q.** Are there any other wells pumping that you have modeled as
[18] part of this portion of the simulation?
[19] **A.** During 2009 there are no other wells pumping.
[20] **Q.** What happens in 2010?
[21] **A.** In 2010 the wells begin to pump, it's part of the West Side
[22] Corporation remediation.
[23] **Q.** Let's go to 2010.
[24] **THE COURT:** What's the blue spot?
[25] **THE WITNESS:** That's Station 24 wells, and they are

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[1] being turned on as indicated by the blue.
[2] **Q.** Go to 2015, please. Now, in your model you assume -- when
[3] did you assume that Station 6 would turn on?
[4] **A.** I have Station 6 wells turning on in the year 2016.
[5] **Q.** And let's click to 2016, and keep going up to 2019.
[6] So here we are in 2019, and then in 2020 what did you
[7] assume with respect to the dependability wells?
[8] **A.** Well, in 2020 the dependability wells turn on. In this
[9] last sequence of slides you can see that the contaminant mass
[10] is continuing to move to the southwest in this area, and there
[11] is a line around in here where there is a reversal, and then
[12] there is a flow of contaminants back towards the well of 6B and
[13] to Station 6 generally.
[14] **Q.** Can you enlarge the area around Station 6. So, what do the
[15] little arrows on this represent?
[16] **A.** Those are the same arrows that I showed yesterday. Those
[17] are the directions of groundwater flow as represented by the
[18] model.
[19] **Q.** Sorry. I have lost which year we are on. Is this 2019?
[20] **A.** I believe so.
[21] **Q.** All right. So then move on to 2020. The dependability
[22] wells come on, right?
[23] **A.** So, the blue dots represent the dependability and the
[24] existing capacity wells turning on.
[25] **Q.** And let's flip forward to 2024. I mean click through 2024

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[1] and then stop there. OK. Now enlarge the same area that you
[2] just had up there. And what does this show, Mr. Terry?
[3] **A.** The arrows on the map show the flow of groundwater in this
[4] area towards Station 6. You can see a localized in this area
[5] they are flowing towards Station 24. What you are seeing is
[6] this red area MTBE plume is reaching well 6B, and it happens
[7] that in the output for the model that this is when the maximum
[8] concentration of MTBE occurs, and it's primarily due to this
[9] plume to the south reaching well 6B.
[10] **Q.** That plume to the south, is that the pear shaped plume that
[11] we spent some time going through?
[12] **A.** That's correct.
[13] **Q.** Liz, can you go back to the 2016 slide for a moment. OK.
[14] And enlarge the section around the Station 6 wells.
[15] Mr. Terry, is it your opinion -- or do you have an
[16] opinion with respect to whether MTBE will be in the Station 6
[17] wells when they are turned on in 2016?
[18] **A.** Yes, it will be in the wells when they are turned on in
[19] 2016.
[20] **Q.** And why do you conclude that?
[21] **A.** Because we can see MTBE is present in all the areas around
[22] the well, and it's being intercepted by these wells when they
[23] are pumped.
[24] **Q.** Let's go back to 2024. Liz, if you will click through to
[25] 2030, please.

[1] **A.** I may not be able to do it exactly. It's in this area
[2] around here.
[3] **Q.** Thank you. All right. Go on to flip through to the slides
[4] to the end of the model.
[5] Did you also generate a numerical output that shows
[6] the concentrations at different times of the combined Station 6
[7] wells over time?
[8] **A.** Yes, I did.
[9] **Q.** And what I am referring to is the combined level of MTBE in
[10] those wells over time.
[11] **A.** That's right.
[12] **Q.** Did you do that with respect to scenario or analysis 1?
[13] **A.** Yes, I did.
[14] **Q.** If you will turn to Plaintiff's Exhibit 1680.
[15] It's behind tab 28, your Honor. And I will give
[16] counsel an opportunity to object.
[17] **MR. STACK:** I have no objection to the display, your
[18] Honor.
[19] **THE COURT:** OK.
[20] **MR. SHER:** And I move it into evidence.
[21] **THE COURT:** OK.
[22] **Q.** Can you explain what this graph shows?
[23] **A.** This graph shows the levels of MTBE that will be in the
[24] Station 6 wells as projected by this run of the model over
[25] time. So, on the left axis over here is the MTBE

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[1] What does this show, Mr. Terry?
[2] **A.** This shows conditions in 2030. You can see that it will
[3] continue to flow towards Jamaica Bay. One thing I should have
[4] pointed out earlier on these slides is that when we did the
[5] modeling analysis we really looked for sources that are in the
[6] future or near the future capture zone of Station 6.
[7] So, the fact that it's white colored out here is
[8] simply a reflection of we didn't consider that area in our
[9] input for our model. And so this is showing the continued flow
[10] here, and by 2030 flow in this outlying capture zone is
[11] essentially established, so this mass is generally heading
[12] towards Station 6.
[13] **Q.** Liz, could you enlarge the four wells immediately in the
[14] middle of the map up at the top.
[15] OK. What does this show with respect to the movement
[16] of water and the movement and presence of MTBE with respect to
[17] those wells?
[18] **A.** Well, in general the movement of MTBE would be the same as
[19] the movement of groundwater, so we can see that the movement of
[20] groundwater is affected by wells in this area, the pumping of
[21] wells.
[22] **Q.** Can you tell us -- oh, those are wells, correct?
[23] **A.** The blue dots are wells.
[24] **Q.** Let's go back. Could you remind us where the Parsons
[25] Boulevard site is on this map.

[1] concentration. The bottom is zero, ten, 20, 30. So those are
[2] numbers in parts per billion. Then across the bottom are the
[3] years. The first year that you see here is 2016, and that's
[4] when Station 6 is first pumped. And the last year is 2040.
[5] **Q.** What's the black line?
[6] **A.** Both lines show concentrations over time. The black line
[7] shows what would be in the water from combined -- from the five
[8] wells that are in the upper glacial aquifer. So if we take the
[9] water from the five upper glacial wells, we combine them
[10] together, that would be the combined concentration of MTBE in
[11] that.
[12] **Q.** What does the red line shown?
[13] **A.** The red line underneath it is all six of the Station 6
[14] wells. So, the last of the Station 6 wells is installed in the
[15] deeper Lloyd aquifer, and that water doesn't have MTBE in it,
[16] so it dilutes the concentration.
[17] So, the red line is showing the combined flow from all
[18] six of the Station 6 wells in the future, reaching a peak
[19] concentration of about 35 parts per billion in around 2024.
[20] **Q.** So, if we look only at the five combined wells that are in
[21] the upper glacial aquifer, what is your view of what the
[22] concentrations would be in the wells when they are turned on in
[23] 2016?
[24] **A.** When they are turned on in 2016, the black line is showing
[25] around 29 parts per billion, and the combination of all six

[1] wells is at 21 or 22, something in that range.
[2] **Q.** Why does it then drop shortly after the wells on?
[3] **A.** Because when you turn on a pumping well it is drawing water
[4] from all different directions. Some of that water has more
[5] MTBE in it, and some has less, and so after the well is turned
[6] on you are seeing that response, and it's a drop in
[7] concentration.
[8] **Q.** And this model output shows -- when does it show that the
[9] peak is reached for the combined flow of the five wells in the
[10] upper glacial aquifer?
[11] **A.** Somewhere in the year 2024.
[12] **Q.** And the same question, when is the peak reached for the
[13] combined flow of all wells in the upper glacial aquifer? I
[14] mean including the one in the Lloyd aquifer.
[15] **A.** In the same timeframe.
[16] **Q.** And with respect to the concentrations that this model
[17] result projects, do the combined flows remain above 20 parts
[18] per billion during the entire time of the model run?
[19] **A.** That's what this run shows.
[20] **THE COURT:** OK. So this would be a good place to
[21] pause?
[22] **MR. SHER:** Perfect place.
[23] **THE COURT:** OK. So, we will reconvene at ten after
[24] two. The jury is excused.
[25] (Jury not present)

[1] **THE COURT:** OK. And we talked about the time being
[2] under an hour for each summation.
[3] **MR. SHER:** Sure.
[4] **THE COURT:** OK. The charge this time is very short,
[5] ten minutes. So, I think they will get some deliberation in on
[6] Friday. So, I think I will tell them that, and I will tell
[7] them it's up to them how long they wish to stay. And when they
[8] come back I'm going to give them that projection just so they
[9] know where we're up to.
[10] **MR. SHER:** I am not anticipating calling any rebuttal
[11] witnesses, but depending on where we are at the end of their
[12] case, it's possible.
[13] **THE COURT:** OK, we will see. OK.
[14] **MR. SHER:** Thank you.
[15] **THE COURT:** See you at ten after two.
[16] (Luncheon recess)
[17] (Continued on next page)
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[1] **THE COURT:** So let's have a little of our own
[2] projection now. How much longer is the direct examination?
[3] **MR. SHER:** I apologize, your Honor. We are taking
[4] longer than I thought.
[5] **THE COURT:** Right.
[6] **MR. SHER:** But I think he has his second analysis to
[7] run through, which will be much quicker than the first.
[8] **THE COURT:** So, what do you think on direct, another
[9] half hour maybe?
[10] **MR. SHER:** Under an hour.
[11] **THE COURT:** On direct. And then the cross will take
[12] the rest of the day?
[13] **MR. STACK:** I believe so.
[14] **THE COURT:** So, you don't think Mr. Cohen will be
[15] today?
[16] **MR. SHER:** We have him on call; he can be here if we
[17] need him.
[18] **THE COURT:** But you think it's more likely tomorrow.
[19] **MR. STACK:** I think it's more likely tomorrow.
[20] **THE COURT:** And then you have one witness tomorrow.
[21] **MR. STACK:** Correct.
[22] **THE COURT:** So, do you think we will get as far as
[23] summations tomorrow?
[24] **MR. STACK:** It depends on the length of cross. It's
[25] possible, but I think it will be more likely Friday, candidly.

[1] AFTERNOON SESSION
[2] (2:10 p.m.)
[3] (In open court; jury present)
[4] **THE COURT:** Please be seated. Just before we begin, I
[5] have a few announcements on timing. I think I mentioned it way
[6] back when that tomorrow morning is the one I have to be a bit
[7] late. I have a long-standing appointment Thursday morning, so
[8] say 10:30. I'll be sure we get started no later than 10:45.
[9] If you all can be here at 10:30. That would be good, so you
[10] get a little respite.
[11] Next Friday, the 28th of August, we're not sitting at
[12] all. Not sitting at all next Friday, I think I told you that
[13] too way back, not sitting.
[14] And a little update on how we're doing on phase two.
[15] I think, again, thanks to the lawyers' cooperation, we're ahead
[16] of schedule, and our best projection now is that the evidence
[17] will close sometime tomorrow, the end of tomorrow, and then we
[18] would have summations and charge on Friday morning and our
[19] schedule on Friday, as you know, is 9 to 2, but of course
[20] you'll be deliberating by then. It's up to you to choose how
[21] long you wish to stay. So I think you will begin deliberations
[22] on Friday.
[23] I hope that's a helpful update. Everybody got it? Be
[24] here a little late tomorrow, 10:30, nothing a week from Friday
[25] and hopefully you'll be in deliberations this Friday. Okay, I

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[1] hope I got it all. Okay, so, Mr. Sher?

[2] **MR. SHER:** Thank you, your Honor.

[3] **BY MR. SHER:**

[4] **Q.** Mr. Terry, when we left off, we had just wrapped up

[5] analysis 1. Did you do another modeling analysis with respect

[6] to the anticipated impacts of MTBE on Station 6?

[7] **A.** Yes. I performed analysis 2.

[8] **Q.** And why did you do analysis 2?

[9] **A.** Well, any time you're doing a modeling project and

[10] particularly one where there's uncertainties about the source

[11] term, in other words, how much MTBE there is out there, you

[12] like to do a bunch of different scenarios to sort of determine

[13] what the range of potential impacts will be in the future. So

[14] what we did with analysis 2 was instead of just looking at

[15] locations where there happened to be data available for 2004,

[16] we reviewed to see information about where discharges of

[17] gasoline to groundwater had occurred during the time when MTBE

[18] was in gasoline.

[19] **Q.** And why didn't analysis 1 answer all the questions that you

[20] wanted to have answered with respect to duration of MTBE

[21] impacts on Station 6?

[22] **A.** Well, first of all, my analysis 1 was sort of intended to

[23] find this peak concentration that could occur at Station 6.

[24] And it did also show an impact on Station 6 lasting until 2040.

[25] But I wanted to do another analyses from a different approach

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[1] to bolster that opinion especially on the length of impact on

[2] Station 6 in the future.

[3] **Q.** Did you use a different computer model for analysis 2 than

[4] you did in analysis 1?

[5] **A.** No, the model that we used was the same model. The only

[6] change that we made was how we put the input into the model.

[7] **Q.** So what was the first step in performing analysis 2?

[8] **A.** Well, we reviewed the files that we had, I described

[9] before, the database information as well as the site

[10] remediation files, and we looked through that information to

[11] identify spills where we could, where there was enough

[12] information to say that the gasoline had spilled, actually got

[13] into the groundwater. So in some cases there was actually

[14] groundwater data that showed that happened. Other cases there

[15] were spills to the soil that provided some evidence that impact

[16] to groundwater would have occurred.

[17] **Q.** Now, the jury has heard testimony about the differences

[18] between spills and releases. Are you differentiating between

[19] those two terms?

[20] **A.** I'm using the terms the same way as they were reported to

[21] the DEC.

[22] **Q.** So they include both spills and underground releases?

[23] **A.** Spill reports to the DEC.

[24] **Q.** How do you know how much gasoline was released in the sites

[25] you examined?

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[1] **A.** Well for some of them there were reported spill amounts.

[2] But those were the exception. That's really the hardest part

[3] of this analysis, getting a handle on the volumes of releases.

[4] So what we did to overcome that was we used a range of release

[5] volumes.

[6] **Q.** And how many sites did you include in your analysis 2

[7] modeling exercise?

[8] **A.** We identified 22 sites to include in the analysis.

[9] **Q.** What volumes did you use as inputs to your model?

[10] **A.** We used three different volumes.

[11] **Q.** That is for analysis 2?

[12] **A.** Per analysis, so we did three different runs for analysis

[13] 2. The first analysis assumed that only 50 gallons of gasoline

[14] was released at each site and reached the water table. That's

[15] kind of a de minimis amount. A 50-gallon spill, at least the

[16] ones I've investigated, are very limited and oftentimes spills

[17] like that aren't even really detected very well.

[18] Then the second analysis I did was a 500 gallon

[19] release, and the maximum volume that I tested was a 2,000

[20] gallon release.

[21] **Q.** How did you come up with the 2000 gallon figure?

[22] **A.** Well, 2000 was meant to represent a moderate-sized release.

[23] We know there are releases in this area that are larger than

[24] that. There's some literature information about releases on

[25] Long Island that show much greater release volumes than that.

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[1] That was intended to represent sort of a moderate release

[2] volume of this size.

[3] **Q.** Do you have a view of among the three scenarios you ran

[4] which is most representative of actual conditions in the

[5] aquifer?

[6] **A.** Just looking at the total amount of gasoline that was

[7] released, I would say that the 2000-gallon release is probably

[8] the most realistic of those scenarios. 50-gallon release is

[9] sort of what I call a de minimis release. It's a very, very

[10] small release and to assume those are the only release volumes

[11] at all these stations we've seen data about is very small. So

[12] when I look at the 2000-gallon release volume, when we look at

[13] the small capture zone area of Station 6, seven-square mile,

[14] there's lots of sources to that area, that I believe that to be

[15] closer to that scenario.

[16] **Q.** Would you consider 2,000 gallons a conservative or

[17] aggressive assumption that you used as input in the model or

[18] the high end?

[19] **A.** I think when you look at the entirety of the capture zone

[20] it's a relatively conservative scenario.

[21] **Q.** Why is that?

[22] **A.** Because there are so many sources. We just identified 22

[23] locations, but there are many more reported spill locations and

[24] there are even more gasoline tank locations that could be

[25] spills that haven't been discovered.

[1] A. Yes, I did.
[2] Q. Turn to tab 33. This is PL 1622, your Honor. Does this
[3] graph depict your conclusions -- strike that. Let me start
[4] that sentence over again. Does this graph show what the model
[5] predicted would be the input to Station 6 wells under analysis
[6] 2?
[7] A. Yes, it does.
[8] MR. SHER: Proffer this in evidence, your Honor.
[9] MR. STACK: No objection, your Honor.
[10] THE COURT: Received.
[11] Q. Can you explain what we're looking at in this graph?
[12] A. This shows the effect of the three different scenarios that
[13] we ran under analysis 2 for the 50-gallon, 500-gallon and
[14] 2,000-gallon release scenarios.
[15] Q. The line in red is which release?
[16] A. The line in red is what we called scenario C, which is the
[17] 2,000-gallon release scenario.
[18] Q. The line in blue?
[19] A. That's the 500-gallon release scenario.
[20] Q. The solid black line at the bottom?
[21] A. That's the 50-gallon scenario.
[22] Q. Is the graph reflecting the combined concentration of MTBE
[23] in all of the Station 6 wells at the times reflected along the
[24] bottom of the graph?
[25] A. Yes. It includes the combined pumping of all the wells

[1] including the Lloyd aquifer well, which is the deep well as
[2] explained.
[3] Q. What conclusions did you draw from this model run?
[4] A. The purpose of this model run is more to test the length --
[5] how long would MTBE contamination last at Station 6. That was
[6] really the purpose of this. My conclusion from this was that
[7] even with a relatively modest scenario C of the 2000-gallon
[8] release and even B, the 500-gallon scenario, we were seeing
[9] impact to Station 6.
[10] Q. Why do you think that with respect to duration analysis 22
[11] provides valuable information that analysis 1 did not?
[12] A. I think even with these small release volumes, there's
[13] indicating that there's sufficient volume there to provide an
[14] impact to Station 6 for the future, so I think it's significant
[15] to analysis 1.
[16] Q. Did you make any corrections to analysis 1?
[17] A. Yes, at one point I made some corrections to information we
[18] had in our database about spills in analysis 2 and I conducted
[19] a separate simulation to improve the analysis.
[20] Q. If we turn to 4668, before we bring it up, does this graph
[21] represent the output of the corrected run?
[22] A. Yes, it does.
[23] MR. SHER: Any objection?
[24] MR. STACK: Only objection, could you establish the
[25] volume?

[1] MR. SHER: Sure.
[2] Q. Which volumes did you show on this analysis? Which input
[3] assumption values did you show on this exhibit PL 1668?
[4] A. I ran this corrected run with scenario C, which is the
[5] 2,000-gallon release, to compare it with the original.
[6] MR. STACK: No objection.
[7] MR. SHER: Bring it up.
[8] Q. So does this show your corrected analysis 2 run?
[9] A. Yes, this compares the original one to the corrected one,
[10] so there was some decrease in the initial concentration
[11] associated with this, but eventually there are similar results
[12] and really that the purpose of this analysis wasn't so much the
[13] concentrations as it was the longevity.
[14] Q. What sort of factual changes did you make in your input as
[15] between the initial run and this one?
[16] A. There are several. I think there was two locations where,
[17] one location, there was a pair of locations where the spill
[18] volumes had been swapped so we fixed that, and then there was
[19] another one where the thickness of the aquifer under the spill
[20] was corrected.
[21] Q. Did you also correct scenarios 2B and 2C, that is, the
[22] lower volume runs?
[23] A. I didn't perform additional ones --
[24] Q. I'm sorry, 2A and 2B. This is 2C?
[25] A. I didn't perform additional runs for those two. Based on

[1] this, we're not expecting the long-term effect to be different
[2] on those as well.
[3] Q. How confident are you that your model accurately reflects
[4] the future conditions in Station 6, and I'm referring to both
[5] your analysis 1 and your analysis 2?
[6] A. It's my opinion that analysis 1 and analysis 2 reasonably
[7] reflect what will happen in Station 6 in the future in terms of
[8] the peak concentration that will occur and the length of the
[9] impact.
[10] Q. Let's talk about some uncertainties. What if Station 6
[11] turns on somewhat later than 2016? How would that affect your
[12] opinion about the impacts of MTBE on Station 6?
[13] A. I think any change in the analysis made will have a slight
[14] change in the curve. If we're talking about a few years
[15] difference either way, it shouldn't have a substantial effect.
[16] I would still have the same opinion.
[17] Q. What if the other wells that you assumed in your simulation
[18] coming on in 2020 come on at different times or don't come on
[19] at all? How would that affect your conclusion?
[20] A. If they don't come on at all, I think the capture zone
[21] would be considerably different than I had before. Yesterday I
[22] showed a capture zone, I think for 2019, right before the
[23] dependability wells turn on, and that capture zone is a
[24] completely different direction than the ultimate capture zone.
[25] When you look at the results I got for analysis 1, the curve

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[1] through that year 2019 peaks at about 20 parts per billion. So
[2] I think it's reasonable to conclude that 20 parts per billion
[3] impacts would still occur at Station 6, but the precise dates
[4] will be different.

[5] In terms of the rest of your question, if the pattern
[6] is different, there's a whole range of scenarios one could
[7] possibly run. There's an infinite number of scenarios one
[8] could possibly run. The one I ran here was the one that the
[9] planners for the joint venture dependability water system told
[10] me was the plan so that's why I ran this one. Generally when
[11] we're designing or projecting a future impact at a well, we're
[12] given a scenario. Sometimes it's a conservative scenario, but
[13] it's the best scenario that we have and that's usually a basis
[14] for the design, even if the ultimate pattern ends up being
[15] different than that.

[16] Q. Is it your opinion to a reasonable degree of scientific
[17] probability that the impacts at Station 6 under the assumptions
[18] you made and the model you run will be as you described to the
[19] jury?

[20] A. I believe that I can conclude with a reasonable degree of
[21] scientific certainty that a peak concentration of 35 parts per
[22] billion should be expected at Station 6 in the future and it
[23] should be expected to run until at least 2040.

[24] Q. And what year would you expect with a reasonable degree of
[25] scientific probability that peak to occur?

[1] MTBE but other compounds were added into that, so we made that
[2] correction. And then also one of the contours didn't include
[3] the information we had about well 6D at the plant, so we moved
[4] that concentration contour and we conducted the run again.
[5] Q. So the inputs and the outputs for the model that you showed
[6] the jury today are your corrected versions, is that right?
[7] A. I believe we have an exhibit that shows the comparison
[8] between the two. The one I think we may have shown earlier was
[9] the original.

[10] MR. SHER: Let's go to -- your Honor, may I have just
[11] a moment?

[12] (Pause)

[13] MR. SHER: Your Honor, this is my mistake for not
[14] having asked the witness about it earlier and I apologize. It
[15] will just take a moment.

[16] Q. If you turn to PL 14855, which is behind tab 29.

[17] MR. SHER: Can you bring it up? This one has already
[18] been admitted into evidence.

[19] Q. This is your corrected one, am I right?

[20] A. This is the input -- from this scale you probably really
[21] can't tell the difference, but the contour near well 6D is
[22] slightly different.

[23] MR. SHER: And go to the second page of this.

[24] Q. Is this a comparison of your initial and then corrected
[25] runs for analysis 1?

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[1] A. In or about the year 2024.

[2] Q. Is there any way for you to quantify that your model is
[3] accurate to a certain percentage, such as to say that it's
[4] accurate to 75 or 80 percent or something like that?

[5] A. There's really no way to express an overall error rate for
[6] a model. It really depends on the question you're trying to
[7] answer and how useful the model is to answering that question.
[8] So there are certain ways you can assess how suitable it is for
[9] different problems. What we did here to try to bracket that by
[10] running different simulations to test how sensitive the model
[11] was to that.

[12] Q. Is it typical to calculate an error percentage at a number
[13] with respect to the output of a model like this?

[14] A. You really can't use a single number to calculate an error
[15] percent that way.

[16] Q. Did you also correct any -- between the time that you first
[17] ran scenario 1 and the time that you prepared the materials
[18] that we discussed today, did you make any corrections to some
[19] discrepancies in analysis 1 as well as the ones that you
[20] described for analysis 2?

[21] A. Yes, there were some minor changes that we made for
[22] analysis 1. There was one site where I think it was a site I
[23] described earlier when we were describing that one plume area
[24] where there was 65,900 PPB concentration. Initially we had a
[25] slightly higher concentration that turned out to be not just

[1] A. That's right.

[2] Q. In your view, do the differences between the two affect
[3] your opinion in any way?

[4] A. No, they do not.

[5] MR. SHER: I don't have any further questions, your
[6] Honor.

[7] THE COURT: All right. Thank you, Mr. Sher.
[8] Mr. Stack?

[9] MR. STACK: Yes, your Honor, thank you.

[10] CROSS-EXAMINATION
[11] BY MR. STACK:

[12] Q. Mr. Terry, you were retained to work on this matter in
[13] November of 2008, am I correct?

[14] A. I think the beginning of November, yes.

[15] Q. And with respect to the work that you've done on this
[16] matter, you have a group of people at Leggette, Brashears, and
[17] Graham who work with you, am I correct?

[18] A. Yes.

[19] Q. You work with Mr. Guha in your Connecticut office?

[20] A. That's correct.

[21] Q. You work with Mr. Taylor in your Connecticut office?

[22] A. Yes.

[23] Q. You also have assistance from Mr. Tyczka in your New Jersey
[24] office?

[25] A. Yes, I do.

[1] drawing a line on the ground surface, and you're sort of
[2] slicing through that with a knife, and then you are kind of
[3] looking at that slice that you cut. It's a transect.
[4] Q. And on the following cross-section we are going to look at,
[5] so we're clear, we are going to be looking at A to A prime
[6] right here.

[7] If we can go to that cross section now.

[8] Now, if we look at this, this is a depiction of the
[9] contamination. What contamination is being detected?

[10] A. This is PCE contamination.

[11] Q. And you have had experience cleaning up PCE contamination
[12] in your career, correct?

[13] A. Yes, I have.

[14] Q. PCE behaves differently than MTBE in the subsurface, am I
[15] correct?

[16] A. Yes, in some ways it does.

[17] Q. PCE is a heavy molecule, so it sinks. It's called a dense
[18] nonaqueous phase liquid where there is actual PCE in the
[19] subsurface?

[20] A. Well, I'm not sure that's what's being represented here.
[21] If you have liquid PCE, the actual product itself like a dry
[22] cleaner would use, then that is a sinker. But once PCE is
[23] dissolved in the water it really just behaves like any other
[24] dissolved constituent.

[25] Q. But with respect to PCE, it moves at about a third of the

[1] speed of groundwater, am I correct?

[2] A. That can vary. PCE has a behavior that's different than
[3] MTBE because it tends to stick to the surfaces in the aquifer,
[4] so it will stick for a little while, become unstuck and stick
[5] again, so overall it tends to move slower than the groundwater.

[6] Q. And with regard to this particular report, do you recall
[7] Mr. Cohen's conclusions about the speed at which PCE was moving
[8] in this particular area?

[9] A. I didn't review his conclusions about PCE.

[10] Q. Fair enough. Now, we can go back and look right here.

[11] Dave, if you can isolate, this is 15. So, well number
[12] 15 is depicted here, and do you know how close that well number
[13] 15 is to the BP station at 113-40 Merrick?

[14] A. I don't know without consulting maps or something.

[15] Q. And did you as part of your analysis before coming here to
[16] testify determine whether or not the detection of MTBE in that
[17] middle level where it says ND, did you see whether or not that
[18] was down grading of the contamination moving from the BP site?

[19] A. I didn't check that.

[20] Q. Now, in the course of the work that you did in this case,
[21] did you actually before coming here to testify attempt to
[22] correlate all the detections or nondetections of MTBE in the
[23] subsurface to see how related to a release of gasoline that
[24] occurred at Station 24?

[25] A. No, I didn't really look to see what the source of the MTBE

[1] was. My only interest in showing it here was just that it's
[2] near Station 6.

[3] Q. Well, you did in part of your simulations, you did include
[4] simulations for release of gasoline at Station 24. Am I
[5] correct?

[6] A. I believe that on the first analysis I did I did include a
[7] value for 2004 at Station 24.

[8] Q. And you showed the plume of contamination that was coming
[9] from that site, am I correct?

[10] A. I don't know if I have shown a plume or not.

[11] Q. With regard to your analysis 2, do you know whether there
[12] is a plume of contamination emanating from that site?

[13] A. I don't think we included Station 24 in the original
[14] analysis. We did do a second analysis of analysis 2 where we
[15] added some additional on-sites to the model, and in that
[16] simulation I believe we did include Station 24.

[17] Q. And with regard to the contamination, so we're clear, the
[18] detection of MTBE was down here in well 15, at the toe of the
[19] plume. Am I correct?

[20] A. I'm having a hard time on this map seeing where well 15 is.

[21] Q. Let's see if we can pull up another one and help you.

[22] THE COURT: Could you use a laser pointer and just
[23] show us 15 on this map?

[24] MR. STACK: I can do it, even as short as I am,
[25] without jumping, just point to the spot.

[1] THE COURT: All right.

[2] MR. STACK: I will represent to the court it's in this
[3] vicinity, your Honor, right here. And we can get a map up.

[4] THE COURT: But you don't see --

[5] MR. STACK: It is not on this version because this
[6] particular map doesn't have monitoring wells, your Honor. We
[7] will have to pull one up with monitoring wells; and I am sure
[8] that we can do that.

[9] THE COURT: What are all these B numbers?

[10] MR. STACK: Those are soil borings, your Honor.

[11] THE COURT: Oh, OK.

[12] MR. STACK: I apologize for that, your Honor.

[13] Can we blow up 15, please, at the toe of the plume.
[14] There we go.

[15] Q. Does that refresh your recollection, Mr. Terry, about where
[16] well 15 is? And I apologize for not having that up earlier.

[17] A. It says W-15D, yes.

[18] Q. And with regard to this well -- go back to the full size --
[19] can you recall from the release of gasoline that occurred at
[20] Station 24 in these wells -- now these well are --

[21] THE COURT: Wait. Let me interrupt. Is 15I the same
[22] as 15D in terms of location?

[23] MR. STACK: D is deeper in the same well. That's a
[24] good question.

[25] THE COURT: Do you accept that?

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[1] We used three different release volume assumptions there, but
[2] what we did was not a stochastic model.

[3] **Q.** Now with regard to your analysis 2, your analysis 2 was one
[4] in which you used hypothetical spill volumes, am I correct?

[5] **A.** Well, yes, I used a range of different volumes.

[6] **Q.** And with regard to those volumes, they were -- and I
[7] believe you acknowledged -- hypothetical volumes?

[8] **A.** Well, yeah, they are hypothetical in the sense that we are
[9] testing what different volumes, what implication those would
[10] have.

[11] **Q.** And with regard to each one of the service stations that
[12] you looked at on that table that we reviewed, you had a date in
[13] which there was a reported release, am I correct?

[14] **A.** Yes.

[15] **Q.** Are you able to state to any reasonable degree of
[16] scientific probability for the jury the exact date when MTBE
[17] was first released from any of the stations you modeled in
[18] analysis 2?

[19] **A.** Well, there is some input that we used in analysis 2 where
[20] there were actually spills that people saw when they occurred.
[21] So for those the date is fairly reliable. For the others it's
[22] hard to estimate specifically when the release started.

[23] **Q.** And with regard to the starting date for underground
[24] releases that weren't visible, are you able to state an opinion
[25] to any reasonable degree of scientific probability as to when

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[1] that release first resulted in MTBE being present in
[2] groundwater?

[3] **A.** No, there really wasn't that kind of data you would need to
[4] establish when a release started.

[5] **Q.** Now, with respect to the volumes that you looked at, were
[6] there any sites that you modeled an analysis to in which you
[7] had specific volumes that you used and put into your model
[8] based on information available to you?

[9] **A.** Yes, there was some sites. Usually they were surface
[10] spills where people could see the spill, and so they reported
[11] that.

[12] **Q.** Now, for underground spills, were you able to determine to
[13] any reasonable degree of scientific probability how much
[14] gasoline was released at any of the stations which had only
[15] underground spills?

[16] **A.** Well, there was the one spill I know like on 84-04 Parsons
[17] Boulevard where we eventually found a document that described a
[18] release of 4,000 gallons of super unleaded gasoline, so for
[19] example for at least part of what's at that site we do have
[20] that amount.

[21] **Q.** And with regard to the other stations other than 80-84
[22] Parsons, were you able to state an opinion for the jury to a
[23] reasonable degree of scientific probability regarding how much
[24] gasoline with MTBE was released at any of the stations where
[25] there were underground leaks?

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[1] **A.** Well, there are other stations where some remediation was
[2] started where they are trying to clean up the source of the
[3] gasoline release, and what they would do in some cases is they
[4] would install a soil vapor extraction system. So, this is a
[5] system that's kind of like a vacuum cleaner you put
[6] underground, and it draws soil vapor into it. So, for some of
[7] those sites they would calculate how many pounds of hydrocarbon
[8] they removed when they activated that system. So, for some
[9] sites when you look at that data you can begin to get estimates
[10] of the spill volumes.

[11] Now, what you are seeing there is a certain number of
[12] pounds of gasoline constituents that they were able to pull out
[13] of the ground, but there is still gasoline remaining in the
[14] ground. So, they will give you like a lower range estimate
[15] certainly if they're bigger than that. So, we did see some
[16] data for that sort of situation.

[17] **Q.** And did you for purposes of your modeling incorporate that
[18] data to establish specific amounts, or did you just use 50, 500
[19] and 2,000?

[20] **A.** We still used a range for the unknown sites. At those
[21] sites where we did know, I suppose that would provide a lower
[22] bound. For example, most of the sites where I saw that kind of
[23] data, certainly they were larger than 500 gallon releases, so I
[24] suppose I could have not done the 50 gallon scenarios for those
[25] sites, just limited it to a 500 or 2,000 gallon release. I

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[1] didn't do that; we did the full range at all sites.

[2] **Q.** So we're clear, you are talking about information that was
[3] obtained from the soil vapor extraction systems, I'm correct?

[4] **A.** Well, that specific example I was giving was for that.

[5] **Q.** And with regard to the soil vapor extraction systems, they
[6] removed contamination from the soil, not the groundwater, am I
[7] correct?

[8] **A.** That's true.

[9] **Q.** Now, did you have any information you can show the jury as
[10] to what the contamination may have been in the groundwater
[11] based on any clean-up?

[12] **A.** Well, no, I don't, but I guess where I was trying to answer
[13] your question, to be clear, was just that that's giving us
[14] information about a spill volume. So, if there was a spill
[15] volume, and even though what they removed was in the soil,
[16] that was still part of the gasoline volume that spilled at the
[17] site. So, what passed beyond the soil and is in the
[18] groundwater is in addition to the volume that I am talking
[19] about.

[20] **Q.** Now, with regard to the numerical output from analysis 2,
[21] you have three different outputs, which we saw in tab 33 in
[22] your binder. That's Terry binder 3, tab 33.

[23] This shows the output of the three analyses you did
[24] with analysis number 2, am I correct?

[25] **A.** Yes.

In The Matter Of:

*THE CITY OF NEW YORK, ET AL v.
EXXON MOBIL CORPORATION, ET AL*

*VOLUME 14
August 20, 2009*

*TRIAL
SOUTHERN DISTRICT REPORTERS
500 PEARL STREET
NEW YORK, NY 10007
212-805-0300*

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Word Index included with this Min-U-Script®

[1] **Q.** Next slide. With respect to the scenario you did, again,
[2] another drought occurs. 2034. Did you do any simulation in
[3] which you started the wells at Station 6 and ran them for one
[4] year, 2034 to 2035, because it was needed to supply water for a
[5] drought?

[6] **A.** No, I did not.

[7] **THE COURT:** I'm sorry, I'm confused. I'm sure nobody
[8] else is. I thought you said you had them pumping all along, 24
[9] hours a day, seven days a week.

[10] **MR. STACK:** That is correct. And I'm asking him, your
[11] Honor -- I'll try to clear it up. What I'm asking Mr. Terry
[12] is:

[13] **Q.** Other than the simulation where you have it pumping all the
[14] time, from 2016 to 2040, did you do any simulation on the
[15] computer where you pumped the wells at Station 6 for a short
[16] duration period sometime after 2020?

[17] **THE COURT:** You mean only.

[18] **MR. STACK:** Only Station 6.

[19] **THE COURT:** No, no, you mean for the short duration as
[20] opposed to continuously from 2016 on.

[21] **MR. STACK:** Yes, your Honor.

[22] **THE COURT:** Now you're submitting it wasn't pumping in
[23] the other years, but only the years you put up there.

[24] **MR. STACK:** Thank you for clarifying.

[25] **THE COURT:** I didn't understand that.

[1] **Q.** So with respect to the scenarios that you did, at any point
[2] in time did you do a simulation where you started to pump wells
[3] at Station 6 and pumped them for a period, for example,
[4] beginning in 2029 pumping for four years while the tunnel's
[5] repaired up to 2033?

[6] **A.** No, I didn't do that simulation.

[7] **Q.** If you were, for example, to pump the wells, putting aside
[8] your scenario where you pump them continuously from 2016 to
[9] 2040, if you pumped the wells at Station 6 for a six-month
[10] period in 2021 because a major water supply tunnel was out of
[11] service and they needed water, would the pumping for six months
[12] have a different capture zone than what you've shown the jury?

[13] **MR. SHER:** Objection, your Honor.

[14] **THE COURT:** I'll allow that now.

[15] **MR. SHER:** But it's an incomplete hypothetical, your
[16] Honor.

[17] **THE COURT:** In what way?

[18] **MR. SHER:** He doesn't say anything about what other
[19] conditions the well may have operated on either before or
[20] after.

[21] **THE COURT:** No, he did. I'll ask it.

[22] Assuming that you did not start pumping in 2016 and in
[23] this model from 2000 to 2040 the only pump that was used was in
[24] 2021, would that change the capture zone?

[25] **THE WITNESS:** Yes, it would.

[1] **Q.** With respect to the pumping of the wells at Station 6, if
[2] you were to pump it for any of these scenarios
[3] hypothetically --

[4] **THE COURT:** And only that amount of time. In other
[5] words, the one year, 2027 to 2028, or the four years, 2029 to
[6] 33, or the one year '34 to '35, and only that period, would
[7] each one have a capture zone?

[8] **THE WITNESS:** Changing the pumping scheme does change
[9] the capture zone. The only thing I don't know is whether the
[10] dependability wells come on 2020 or not.

[11] **Q.** We'll clarify. That's a very good point. With respect to
[12] the dependability wells, if the dependability wells are not
[13] turned on in 2020, the capture zone from Station 6 pumping for
[14] six months in 2021 will have a particular shape and look a
[15] certain way using your model, am I correct?

[16] **A.** Right. You could calculate a capture zone for a six-month
[17] period.

[18] **Q.** And if you were pumping the dependability wells because
[19] they actually come on line and they start pumping in 2020 and
[20] then you turn on Station 6 for six months, that capture zone
[21] would look different than the one without the dependability
[22] wells, am I right?

[23] **A.** Sure.

[24] **Q.** And with regard to the capture zones of these wells or the
[25] wells at Station 6, would the capture zone being changed

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[1] of analysis 2 where I added additional sites.
 [2] **MR. STACK:** Your Honor, I object. When was this
 [3] analysis performed?
 [4] **MR. SHER:** What's the objection?
 [5] **THE COURT:** He doesn't know which analysis you're
 [6] discussing. Which one are you referring to?
 [7] **MR. SHER:** This is the analysis performed in his
 [8] rebuttal report.
 [9] **THE COURT:** All right, that's what Mr. Stack was
 [10] asking. He was asking for clarification, so to speak.
 [11] **MR. SHER:** Your Honor, we've marked as Plaintiff's
 [12] Exhibit 14862 a document which I'm going to ask Mr. Terry to
 [13] look at. It contains three pages.
 [14] **Q.** Mr. Terry, can you describe what the first page of PL 14862
 [15] is?
 [16] **A.** The first page is the results of a run we did of analysis 1
 [17] where we made different assumptions about the spreading factor
 [18] in the model, the dispersivity factor. We used a factor of
 [19] 70 feet and one of 350 feet. That shows the difference between
 [20] those two assumptions.
 [21] **Q.** That was in response to certain criticism by defense
 [22] experts about the value that you used for the spreading in your
 [23] initial run?
 [24] **A.** That's correct.
 [25] **Q.** Could you turn to the next page of the exhibit and tell us

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[1] what that represents, please?
 [2] **A.** This is a map that shows the model area, and it contains
 [3] dots that show the locations of spills that we included in a
 [4] revised run of our analysis 2C, that added additional source
 [5] locations to the original run.
 [6] **Q.** And finally, sir, turn to the third page. Could you
 [7] describe what this is?
 [8] **A.** This is the results of the run that I was describing in the
 [9] previous page compared to our original analysis 2C. It
 [10] presents both recurrence and a single ground.
 [11] **Q.** Do all these pages represent true and accurate depictions
 [12] of the work that you did in the case?
 [13] **MR. CHAPMAN:** Your Honor, I'd like to proffer this
 [14] into evidence and show it to the jury and ask him questions
 [15] about it.
 [16] **THE COURT:** Okay.
 [17] **MR. STACK:** I have no objection, your Honor.
 [18] **Q.** Bring up PL 14862, please?
 [19] You described yesterday in your testimony, Mr. Terry,
 [20] the dispersivity factor. Do you recall the testimony?
 [21] **A.** Yes.
 [22] **Q.** That's basically the spreading factor of the contaminant in
 [23] groundwater, is that right?
 [24] **A.** That's right.
 [25] **Q.** After you prepared the analysis that we discussed

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[1] yesterday, did you receive some expert reports from the defense
 [2] in this case?
 [3] **A.** Yes, I received a number of reports.
 [4] **Q.** And one of the issues that they raised was the dispersivity
 [5] factor that you used?
 [6] **A.** That's correct.
 [7] **Q.** Could you describe for the jury the relationship between
 [8] the dispersivity -- between a high dispersivity factor and what
 [9] appears in the ground in the model?
 [10] **A.** Well dispersivity describes the spreading of a contaminant
 [11] as it appears in the groundwater. So with a higher
 [12] dispersivity, it spreads the plume more as it moves through the
 [13] groundwater.
 [14] **Q.** In your original analysis what dispersivity did you use?
 [15] **A.** 350 feet.
 [16] **Q.** And in your second analysis, what dispersivity factor did
 [17] you use?
 [18] **A.** I used 70 feet.
 [19] **Q.** So you used a dispersivity factor that was one-fifth of
 [20] your original dispersivity factor?
 [21] **A.** Yes.
 [22] **Q.** What does this graph show?
 [23] **A.** This shows the output from the model under Station 6 under
 [24] both assumptions; original analysis shown in red, then the new
 [25] analysis was 70, shown in blue.

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[1] **Q.** How does the different dispersivity factor of 20 percent of
 [2] the original dispersivity factor change your opinion?
 [3] **A.** It doesn't change my opinion.
 [4] **Q.** How do the results of the two runs differ, so that the jury
 [5] can understand why the two lines, how the two lines are
 [6] different?
 [7] **A.** There's a slightly later peak shown on this particular run
 [8] between -- I have it 2027, but it's approximately the same
 [9] value as it was before.
 [10] **Q.** Let's turn to the second page, please. Figure 8. Can you
 [11] tell the jury what this map depicts?
 [12] **A.** This is a map showing locations of the discharge sites that
 [13] we included in our revised run of analysis 2C. So that's
 [14] what's represented by the red dots. And the pattern in the
 [15] background is showing model conditions as of 2008 when we ran
 [16] this simulation.
 [17] **MR. STACK:** Your Honor, just --
 [18] **MR. SHER:** May we have an objection?
 [19] **MR. STACK:** I would object only because I can't tell
 [20] if the zone of capture is in this. It's kind of vague and I
 [21] don't know whether it is or isn't, if I could clarify.
 [22] **THE COURT:** A fair question.
 [23] **Q.** Does this figure show a zone of capture?
 [24] **A.** I don't believe so, no.
 [25] **MR. STACK:** Thank you, your Honor.

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[1] Q. And analysis 2C, just so the jury recalls, is your analysis
[2] in which you assume a certain number of sites each of which had
[3] experienced a 2,000-gallon release?
[4] A. Correct.
[5] Q. And you described yesterday how you used that assumption.
[6] And you added additional sites in response to criticism from
[7] defense experts in this case, is that right?
[8] A. That's correct.
[9] Q. And did you then run the model adding those additional
[10] sites?
[11] A. Yes, I did.
[12] Q. And is the result of the model runs at additional sites
[13] shown on the next page which is figure 9?
[14] A. That's right.
[15] Q. Can you describe for the jury how the model run differed
[16] from the original model?
[17] A. There's more sites and more discharges being represented in
[18] the model. The result of the analysis at Station 6 shows
[19] somewhat higher concentrations from about 23 parts per billion
[20] in 2016 when Station 6 begins operating, declining thereafter.
[21] Q. And in general, would you expect that if there are more
[22] sources of contamination that are included in your model 2 run,
[23] that the duration of impacts on Station 6 would increase?
[24] A. I don't know that the duration would increase, but
[25] depending on where they're located, it might affect the

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[1] concentration that you find.
[2] Q. Mr. Stack asked you yesterday about your experience with
[3] MT3D. Do you recall that?
[4] A. Yes.
[5] Q. You said you had not run before this case MT3D on MTBE.
[6] Why not?
[7] A. Well, because MTBE is a conservative contaminant, tends
[8] to -- it doesn't stick to the aquifer and it doesn't degrade
[9] typically, so we can normally analyze the impact of MTBE from a
[10] site or on a well just using much simpler models than MT3D.
[11] That's why people don't use it. Generally people use the
[12] simplest model that they can to represent the problem they're
[13] studying.
[14] Q. Why did you use MT3D in this case?
[15] A. Primarily because of what we call transient pumpings, in
[16] other words, wells turned on at different times and that's
[17] difficult to do with any other model.
[18] Q. Mr. Stack asked you about the Atrans model. Could you
[19] briefly describe what that is?
[20] A. That's a simple analytical model that you can plug in
[21] velocity of groundwater and information about a contaminant and
[22] it will describe a flow in a linear direction.
[23] Q. Did you use Atrans in this case?
[24] A. I used it in different parts of the case, additional wells
[25] that are not part of Station 6.

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[1] Q. Mr. Stack asked you if you had been involved in service
[2] station cleanups in Queens. Do you recall that?
[3] A. Yes.
[4] Q. You had not been?
[5] A. That's correct.
[6] Q. Have you been involved in service station cleanups
[7] elsewhere?
[8] A. Yes, primarily in New Jersey and in the Tri-state area
[9] generally, but not on Long Island.
[10] Q. About how many?
[11] A. Oh, probably 40 or 50, something like that.
[12] Q. Mr. stack also asked you whether you had been involved in
[13] site investigations at gas stations in Queens. Do you recall
[14] that?
[15] A. Yes.
[16] Q. Your answer was you had not been?
[17] A. In Queens, no, that's correct.
[18] Q. Have you been elsewhere?
[19] A. Yes, I was kind of including that in the answer I gave
[20] before, whether it's a removal of a tank from the beginning or
[21] the investigation.
[22] Q. Mr. Stack asked you with respect to the exhibit listing
[23] detections in Station 6 whether Station 6 wells had been
[24] sampled since 2006 or 2007. Do you remember that inquiry?
[25] A. Yes.

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[1] Q. And the documents in evidence suggested or the evidence
[2] showed that in fact there were not test results since that
[3] period, correct?
[4] A. I'm sorry, can you repeat the dates? I didn't catch that
[5] part.
[6] Q. 2006, 2007.
[7] A. There are some samples from 2007 for Station 6.
[8] Q. Does the lack of more current test results from the Station
[9] 6 wells affect your opinion in any way that MTBE is currently
[10] at the Station 6 wells?
[11] A. Well, we have information from the Westside Corporation
[12] monitor wells that shows MTBE present in that vicinity, so that
[13] demonstrates to me that it's nearby the Station 6 wells. The
[14] only reason they haven't provided information about Station 6
[15] after that is they just haven't been sampled.
[16] Q. Rather than taking the time to get the document, Mr. Stack
[17] also asked you about declining concentrations in certain of the
[18] Station 6 wells from peak in 2002-2003 until last tests in 2006
[19] or 7. Do you recall that?
[20] A. Yes.
[21] Q. And in particular, well 6D had dropped from a peak of about
[22] 350 parts per billion to about 77 parts per billion. Do you
[23] recall that?
[24] A. Yes.
[25] Q. With respect to the location of the plume from which that

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[1] **MR. SACRIPANTI:** Yes, your Honor.
[2] **THE COURT:** Okay.
[3] **MR. CHAPMAN:** Thank you, your Honor.
[4] **Q.** Now, sir, I think you mentioned in phase one that you had
[5] done significant work in connection with the Brooklyn/Queens
[6] aquifer and Station 6 project, correct?
[7] **A.** Yes, that's correct.
[8] **Q.** What was the pilot testing plant at Station 6?
[9] **A.** The pilot testing program was a year-long effort at Station
[10] 6 to test various treatment technologies, primarily oxidation,
[11] membrane technologies for iron and manganese removal from the
[12] water, as well as for reducing the hardness of the water.
[13] **Q.** And were the pumps run at various times during the pilot
[14] testing?
[15] **A.** Yes, we used each of the wells at Station 6 with the
[16] exception of well 33 at one time or another during that, it was
[17] a 13-month long pilot testing period.
[18] **Q.** And were you involved personally in the pilot testing?
[19] **A.** Yes, I was.
[20] **Q.** Now, was the water tested in connection with the water, the
[21] pilot testing?
[22] **A.** Yes, there were extensive water tests done.
[23] **Q.** And was MTBE detected?
[24] **A.** Yes.
[25] **Q.** How soon after the wells were turned on for pilot testing

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[1] was MTBE detected?
[2] **A.** Almost immediately.
[3] **Q.** Do you recall any of the levels that the testing showed?
[4] **A.** Well, of particular concern is well 6D, where when we
[5] started to use it the water from well 6D to run for the pilot
[6] testing plant we saw the MTBE concentrations increase
[7] dramatically, up into the hundreds of parts per million and
[8] peak at 350 parts per million. Very, very shortly after the
[9] well was turned on.
[10] **Q.** May we look at --
[11] **MR. SACRIPANTI:** Just as a clarification, he said
[12] parts per million or parts per billion?
[13] **THE WITNESS:** Parts per billion.
[14] **Q.** May we look at PL 137, which is at tab 1, please? Sir,
[15] what is PL 137? It refers to Station 6 demonstration plant
[16] MTBE desktop evaluation.
[17] **A.** This is the first in a series of three reports that we
[18] prepared to look for the source of the MTBE which had impacted
[19] well 6D during the pilot testing activities, and to use that
[20] information as we moved forward towards evaluating treatment
[21] alternatives for that.
[22] **Q.** So that says there that the desktop evaluation was part of
[23] a contract, it gives a number, to investigate potential sources
[24] of MTBE, correct?
[25] **A.** Affecting well 6D in particular, yes.

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[1] **Q.** That's what it says down below.
[2] **A.** Yes.
[3] **Q.** Was that the well that you testified had the high levels of
[4] MTBE detection, correct?
[5] **A.** That's correct.
[6] **Q.** If we could look, then, at page 7 of 5 of that exhibit. In
[7] connection with that -- could we have that blown up? In
[8] connection with that report, did you identify any particular
[9] sites as known sources of MTBE?
[10] **A.** Yes, we did.
[11] **Q.** What sites did you identify?
[12] **A.** We identified a Citgo gasoline station and an Atlas
[13] gasoline station as certainly potential sources for the MTBE,
[14] as they had documented confirmed releases of MTBE.
[15] **Q.** Were there any other sites that also had documented and
[16] confirmed releases of MTBE that you considered as sources?
[17] **A.** There was one other gas station that had a documented
[18] confirmed release of MTBE. It was an Amoco station on Liberty
[19] Avenue, but we didn't have the -- there had been remediation
[20] there and we didn't have information to really identify that as
[21] one of the sources that would have affected well 6D during that
[22] pilot testing period.
[23] **Q.** So is this desktop evaluation limited to just to that Atlas
[24] and Citgo station as the potential sources?
[25] **A.** Those are the two that we identified as the potential

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[1] sources for that contamination, yes.
[2] **Q.** And so Exhibit 137 only focused on those two as potential
[3] sources, correct?
[4] **A.** Correct.
[5] **Q.** Did you do a followup report, sir?
[6] **A.** Yes, we did.
[7] **Q.** Can we see PL 144, which is tab 2? And, sir, this is a
[8] report which has a, refers to Station 6 demonstration plant
[9] contaminant transport model.
[10] **THE COURT:** Yes, Mr. Sacripanti?
[11] **MR. SACRIPANTI:** Yes, your Honor. I stipulated that
[12] Mr. Cohen is an expert hydrogeologist, but not a modeler. If
[13] he's going to be qualified in modeling, that's fine, but I'd
[14] like that to happen.
[15] **THE COURT:** Are you proffering him as an expert in
[16] modeling?
[17] **MR. CHAPMAN:** I am not at this point, your Honor. I'm
[18] just asking him about these documents.
[19] **MR. SACRIPANTI:** Then I withdraw the objection and I
[20] apologize for interrupting counsel's stream of questioning.
[21] **THE COURT:** No problem. He is familiar with these
[22] documents. These are Malcolm Pirnie documents, are they?
[23] **THE WITNESS:** Yes.
[24] **THE COURT:** And it's in evidence, right?
[25] **MR. CHAPMAN:** It is in evidence.

[1] **BY MR. CHAPMAN:**

[2] **Q.** And it says there this VOC treatment alternatives analysis
[3] was based on the results of the desktop evaluation and the MTBE
[4] contaminant transport modeling which we also saw. Correct?

[5] **A.** Those were the first two documents in the sequence, yes.

[6] **Q.** And in that report did you also assume that the only two
[7] sources of MTBE contamination that would impact Station 6 were
[8] the Atlas and Citgo station?

[9] **A.** Well, yes. This report follows the first two, and then
[10] it's looking at the treatment alternatives given those two
[11] sources only.

[12] **Q.** And did you still believe that those two plumes could be
[13] cleared out between one and a half and three years?

[14] **A.** When Station 6 is started up at its full capacity, yes.

[15] **Q.** Have you done any subsequent work in connection with
[16] Station 6?

[17] **A.** Yes, I have.

[18] **Q.** And what did you do?

[19] **A.** We did prepare an expert report for this litigation, and in
[20] that -- we prepared the expert report for this litigation.
[21] Part of that report we looked at -- we worked closely with
[22] Mr. David Terry of Legette Brasheers & Graham in looking at
[23] other potential sites that might affect Station 6 in the
[24] future, as well as looking at the treatment needs and costs of
[25] those treatments given those scenarios.

[1] reports where there was confirmed releases of MTBE from Citgo
[2] and Atlas will clearly be at Station 6 when the wells are
[3] turned on; and Mr. Terry's work that shows that even after
[4] those two sources or those plumes from those sources may make
[5] their way through that system, that others will follow and will
[6] be there to pick up when those leave off.

[7] **THE COURT:** So, it's based on both your work and his
[8] work?

[9] **THE WITNESS:** Yes, it is.

[10] **THE COURT:** All right.

[11] **Q.** I'm not sure we got an answer to my question before the
[12] objection. So, just to confirm, you believe that when Station
[13] 6 is turned on there will be MTBE in the outflow of those wells
[14] going into the plant, correct?

[15] **A.** Yes, that is my opinion.

[16] **Q.** Sir, are you familiar with the concept of a capture zone?

[17] **A.** Yes, I am.

[18] **Q.** We have heard a lot of testimony about a capture zone.
[19] What is a historical capture zone?

[20] **A.** An historical capture zone is that area that would have
[21] contributed water to the wells under the conditions under which
[22] the wells were pumping in the past, whether the wells were
[23] turned on or whether they were turned off. It depicts that
[24] area that would have contributed that water to the wells.

[25] **Q.** So, just to be clear, historical capture zone is what

[1] **Q.** Have you reached any conclusions as to whether you believe
[2] there will be MTBE contamination in Station 6 from sources
[3] other than Atlas and Citgo?

[4] **A.** Yes, I have.

[5] **Q.** And upon what do you base that conclusion?

[6] **A.** That conclusion is based on my experience in working in
[7] southeast Queens for these last 15 years or so, as well as the
[8] analysis done by Mr. Terry regarding the other gas stations
[9] which reported releases throughout that area and their
[10] potential movement to Station 6 when it's turned on.

[11] **Q.** Do you have an opinion as to whether there will be MTBE in
[12] the combined outflow of the water in the wells when the wells
[13] at Station 6 begin operating?

[14] **A.** Yes, I do.

[15] **Q.** What is that opinion?

[16] **A.** I believe that the MTBE will be there when those wells are
[17] turned on.

[18] **Q.** So, the MTBE will be in the outflow of the water when the
[19] wells are turned on, is that correct?

[20] **MR. SACRIPANTI:** Just, your Honor, that opinion is
[21] based on Mr. Cohen's work or Mr. Terry's work?

[22] **THE COURT:** Or both? What is that opinion based on?
[23] What is the basis of that opinion?

[24] **THE WITNESS:** That opinion is based on my own work at
[25] Station 6 and the analysis that we just talked about in those

[1] happened in the past when we know wells were actually on or
[2] actually off, correct?

[3] **A.** That is correct.

[4] **Q.** What is a future capture zone?

[5] **A.** A future capture zone is that area that would contribute
[6] water to a well in the future under the planned pumping
[7] conditions that are being considered.

[8] **Q.** So, if the planned pumping conditions are that the pump
[9] will be on -- excuse me.

[10] If the planned pumping conditions are that the wells
[11] will be pumping all the time, that would be the assumption for
[12] that future capture zone, correct?

[13] **A.** Yes. You need to be able to define what the condition is
[14] for the future, and then you can develop the future capture
[15] zone that will result from that pumping condition.

[16] **Q.** And in your work have you had the opportunity to look at
[17] both historical and future capture zones?

[18] **A.** Yes, I have.

[19] **MR. CHAPMAN:** Your Honor, no more questions.

[20] **MR. SACRIPANTI:** Your Honor, I just need a minute to
[21] hand out some binders and get myself a little organized if I
[22] may. Thank you so much.

[23] **CROSS EXAMINATION**

[24] **BY MR. SACRIPANTI:**

[25] **Q.** Good afternoon, Mr. Cohen.

In The Matter Of:

*THE CITY OF NEW YORK, ET AL v.
EXXON MOBIL CORPORATION, ET AL*

*VOLUME 15
August 21, 2009*

*TRIAL
SOUTHERN DISTRICT REPORTERS
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[1] (In open court; jury present)
[2] **THE COURT:** Please be seated.
[3] **MR. STACK:** May I resume, your Honor?
[4] **THE COURT:** Please.
[5] **BY MR. STACK:**
[6] **Q.** Mr. Maguire, based on the current information that you have
[7] relative to the service station sites that you've looked at,
[8] would you expect between now and 2015, given that MTBE is not
[9] in gasoline, that those monitoring wells would show increases
[10] or decreases?
[11] **A.** They will continue to show decreases.
[12] **Q.** What about the USGS wells? In the future, are we going to
[13] see increasing concentrations of MTBE in your opinion, or
[14] decreasing?
[15] **A.** Decreasing. There's no new MTBE being released. We've
[16] looked at the trends that we have from available data, the
[17] concentrations are going down.
[18] **Q.** And with regard to the concentrations observed in 2007 for
[19] years before that for the sampling wells in Station 6, would
[20] you expect those concentrations to go up in the future or down?
[21] **A.** I would expect them to go down.
[22] **Q.** And under pumping conditions in 2016, would you expect them
[23] to go up or to go down?
[24] **A.** They should go down.
[25] **Q.** Based on the current information available in your opinion,

[1] can anyone estimate with precision how much MTBE is going to be
[2] in Station 6 wells in 15 years?
[3] **A.** No. No one can tell you exactly what the concentration
[4] will be 15 years. There's a lot of uncertainty about what rate
[5] the wells will pump at, when they'll turn on, whether other
[6] wells will be pumping, dependability wells or not, so there's
[7] uncertainty about under what conditions the wells will be
[8] operating. What we do know, though, is when we have available
[9] data, the USGS wells, the City's supply wells, the service
[10] station wells, there are a lot of data indicating that where
[11] MTBE is present, its concentrations are declining.
[12] **Q.** And concentrations declining would mean what in terms of
[13] the future pumping and MTBE concentrations that might be
[14] observed at Station 6?
[15] **A.** To the extent concentrations were seen in that well in
[16] conjunction with pilot testing in 2003 and also pumping again
[17] in 2006 and 2007, where not only well 33 was pumped, but also
[18] well 6, 6B and 6D were pumped, in total 80 million gallons.
[19] And concentrations were measured then, that in the future when
[20] the wells are pumped the concentrations should be lower than
[21] those.
[22] **Q.** And with respect to future concentrations and future
[23] duration of MTBE in these wells, can you give a precise
[24] estimate of what an amount would be in 10, 15, 20 years?
[25] **A.** No, no one can. As a matter of fact, one of the data

[1] points I would have liked to have seen would have been more
[2] recent sampling data from the Station 6 wells.
[3] **Q.** And with regard to predicting the future based on your
[4] general experience as a hydrogeologist, what would you expect?
[5] **A.** That the concentrations would be low. We do have data that
[6] we can look at from 2002, 2003 when the pilot testing was done.
[7] We know what the concentrations were then. We have data again
[8] from 2006-2007. We know what concentrations were then. We
[9] would expect the concentrations to go down. So when the wells,
[10] to the extent they are pumped in the future, the expectation
[11] would be the concentrations would be low, and likely at
[12] insignificant concentrations.
[13] **Q.** What do you mean by that?
[14] **A.** Probably less than 1 part per billion.
[15] **MR. STACK:** No more questions, your Honor.
[16] **THE COURT:** Thank you, Mr. Stack. All right, we are
[17] now going to begin the cross. Mr. Sher?
[18] **MR. SHER:** Thank you, your Honor.
[19] **CROSS-EXAMINATION**
[20] **BY MR. SHER:**
[21] **Q.** Mr. Maguire, yesterday you told the jury that MTBE plumes
[22] stay attached to their source. Do you recall that?
[23] **A.** Yes.
[24] **Q.** In fact, you referred to them as actually a ship with an
[25] anchor. Do you recall that?

[1] **A.** Yes, in comparing the way --
[2] **Q.** Sir, you were saying --
[3] **MR. STACK:** He didn't finish that answer.
[4] **MR. SHER:** It called for a yes or no, your Honor. I
[5] just asked if he recalled the testimony. I didn't ask for an
[6] explanation.
[7] **THE COURT:** I thought he was in the middle of a
[8] sentence.
[9] **MR. STACK:** Can he finish his answer, your Honor --
[10] **THE COURT:** All I got is, "Yes, in comparing the way,"
[11] then you didn't finish.
[12] **A.** In comparing the way that Mr. Terry conceptualized and also
[13] depicted the movement of contamination in this model.
[14] **MR. SHER:** Your Honor, I move to strike as
[15] non-responsive. I asked him whether his opinion is that MTBE
[16] plumes remain attached to their source.
[17] **Q.** Can you answer that question, sir?
[18] **THE COURT:** He said, he referred to them as actually a
[19] ship with an anchor and then he was trying to explain that
[20] analogy. So in explaining that analogy, he finished.
[21] **Q.** It's your opinion that MTBE plumes remain attached to their
[22] source, is that correct?
[23] **A.** In the majority of cases, that's correct.
[24] **Q.** To demonstrate that point, you referred to a plume -- I
[25] don't know how to pronounce it, in --

[1] THE WITNESS: Yes.
[2] THE COURT: Yes, you were?
[3] THE WITNESS: Yes, I have.
[4] Q. For a party that was not the victim of pollution?
[5] THE COURT: No, he said he was brought in for a party
[6] who experienced the pollution as opposed to the polluter.
[7] Q. Compared to the 70 times that you have testified, how many
[8] times was that?
[9] A. Maybe four or five.
[10] Q. And in the last decade -- referring actually specifically
[11] to the information you provided in your report since 2003 --
[12] you have been retained about 20 times, am I right, including
[13] this case?
[14] A. I don't recall. I know I provided a list of those; I just
[15] don't recall the number.
[16] Q. It's in front of you, it's tab 1 I think. And you can
[17] count them up. There are 19 cases listed there in addition to
[18] this one. It's the very last part.
[19] A. Yes, there are 19, that's correct.
[20] Q. And in any of those -- well, of those, at least 14 you
[21] testified on behalf of oil companies, am I right?
[22] A. I think that's about right.
[23] Q. And in the last decade -- actually to be accurate, since
[24] 2003, in the cases you have listed there, you haven't done any
[25] work estimating the future duration and severity of

[1] done was analyze the site data and report my findings based on
[2] that data.
[3] Q. And the party you represented in each of those instances
[4] was denying responsibility for the contamination, correct?
[5] MR. STACK: Objection to the characterization.
[6] THE COURT: Sustained. He didn't represent anybody.
[7] But the party that retained you in each of those cases was the
[8] one denying responsibility, is that true?
[9] THE WITNESS: Quite honestly I can't remember all of
[10] the details of the 20 cases.
[11] THE COURT: Well, I'm not asking for all the details.
[12] I only want to know whether the party who retained you was the
[13] one who took the position that they were not responsible.
[14] THE WITNESS: Well, that's what I'm wrestling with,
[15] the use of the term denying. I don't know that any of my
[16] clients were denying. It was an issue --
[17] THE COURT: Well, denying in whole or in part?
[18] Denying the amount attributed to them? Denying the sole
[19] responsibility? In some way defending the claim, so to speak.
[20] THE WITNESS: Well, I have worked for defendants and
[21] plaintiffs. I'm just wrestling with how the question is being
[22] phrased.
[23] THE COURT: I'm trying to rephrase it for you. In the
[24] last six years you gave us this list of I guess 19 or 20 cases.
[25] In that group were you retained by the party who was in effect

[1] contamination for anyone other than a party who was potentially
[2] responsible for the contamination, isn't that right?
[3] A. Quite frankly, I don't know all the cases -- litigation or
[4] otherwise -- that I'm involved in, but I can't honestly say
[5] quite frankly.
[6] Q. Of the 20 that are listed on your CV as cases in which you
[7] have testified in the last six or seven years, any of those
[8] involve a party who was not potentially responsible for the
[9] contamination for whom you did work?
[10] A. No, I believe those were all for parties that were
[11] potentially responsible.
[12] Q. So, in fact all of your work certainly during that period
[13] has been devoted to showing either that your clients are not
[14] responsible for pollution or that the effects of pollution will
[15] be smaller and less severe than the party adverse to your
[16] client claims, isn't that right?
[17] A. No, I would not characterize it that way.
[18] Q. Sir, of the parties who you have represented in the 20
[19] cases including this one, did you have a role other than -- as
[20] you have in this case -- to show either contamination was not
[21] your client's responsibility or that the impacts would be less
[22] than the other side in the case was claiming?
[23] A. I don't know that I would have specifically said
[24] universally that the concentrations were less or the
[25] contamination would have been less severe. What I would have

[1] resisting the claim?
[2] THE WITNESS: I believe more often than not that would
[3] be true, yes.
[4] Q. Now, Mr. Terry, I stipulated when counsel was qualifying
[5] you that you were a hydrogeological modeler. And you are,
[6] aren't you?
[7] A. Did you mean Mr. Maguire? I think you said Mr. Terry.
[8] Q. You are Mr. Maguire. I can keep that straight. It was
[9] Mr. Stack who was asking the question. But you told Mr. Stack
[10] that you are an expert in hydrogeological modeling, and I
[11] stipulated to that. Do you recall that?
[12] A. I do recall that, yes.
[13] Q. And you are such an expert, correct?
[14] A. Yes.
[15] Q. And in many cases you actually develop and apply
[16] groundwater models, correct?
[17] A. I have, yes.
[18] Q. And you have done that both with flow models and with
[19] transport models, correct?
[20] A. Yes.
[21] Q. And when you do that you express opinions based on them.
[22] A. I can, yes.
[23] THE COURT: Well, you have.
[24] THE WITNESS: I can. Although I don't -- well, I
[25] certainly use models for various purposes.